

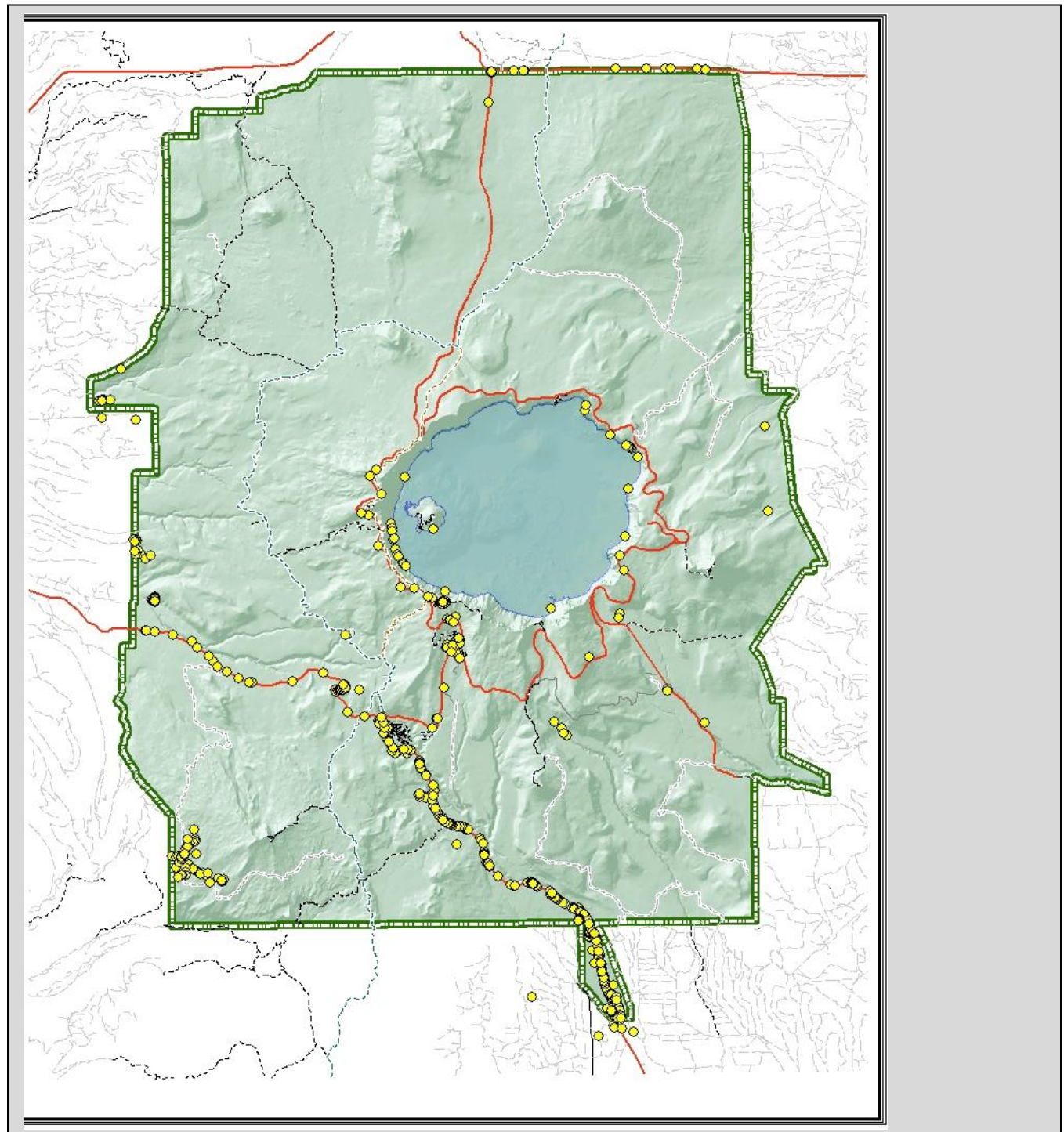


Crater Lake National Park Botany Program

Exotic Plant Report

Invasive Species in Crater Lake National Park

2013



ON THE COVER

Crater Lake National Park Invasive Species Map Generated September 2013

Map by: Melody Fredeic, Biological Science Technician

Crater Lake National Park Botany Program

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U.S. Department of the Interior
National Park Service

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Introduction:

As part of the ongoing mission to preserve the resources of Crater Lake National Park in perpetuity the Botany staff strives to maintain the native biodiversity of the various botanical systems. This is done through various means including; surveying the existing plant populations, encouraging native species growth, education the public, restoring damaged areas, and eradication of non-native plants by applying integrated pest management methods.

During the summer season of 2013 the invasive plant management crew worked on several projects. Invasive plant management along the roads and other high disturbance areas was the primary focus of the season. This included HWY 62, Munson Valley Rd, Pinnacles Rd, North Entrance Rd, Mazama Campground complex, Lost Creek Campground complex, Zantara Housing complex, Steel Circle and Mazama sewage ponds, Anderson and Pole Creek Quarries, South Yard, and Rim Village. Certain high use backcountry sites were also treated including, Spruce Lake, Castle Creek, Crater Creek, Poison Meadows, Cottonwood meadows, sections of Red Blanket Canyon, East and West Rim Drives, and the Panhandle burns.

The treatment data was recorded, tabulated, and entered into the Park database for comparison to previous and future years. Voucher specimens were taken of newly occurring species which were pressed and mounted for the herbarium.

These treatment efforts and the data collected will enable future invasive crews to manage the Park resources to their optimum levels.

Methods:

At all locations the areas of disturbance were scouted on foot or from bicycle. UTM's were taken with a Garmin *GPSmap* 60Cx and immediately recorded on paper. The presence of invasive species was determined and a treatment was decided on. Treatments were usually mechanical and usually occurred at the time of observation excepting the St. John's wort (*Hypericum perforatum*) along the roads and three experimental treatment patches of Sheep's Sorrel (*Rumex acetosella*)¹.

Mechanical treatments usually consisted of Removing as much of the root as possible with the Hori-Hori, removing viable seed heads and bagging them for disposal, and leaving the culms, foliage, and roots to desiccate and biodegrade in place (all biomass is removed from the caldera and high visitor use areas). Specific treatment methods are listed for certain plants.

CIR ARV – Canada Thistle (*Cirsium arvense*) was pulled making certain to remove as much of the rhizome system as possible to prevent rhizomatous re-sprouting. The seed heads were removed and bagged at the first sign of seed development or flowering and the culms, foliage, and roots were left to desiccate. Any location where the chance of later inundation with water was present the roots/rhizomes were bagged and removed for proper disposal.

CIR VUL – Bull Thistle (*Cirsium vulgare*) was pulled making certain to remove the taproot. The seed heads were removed and bagged at the first sign of seed development or flowering and the culms, foliage, and roots were left to desiccate.

HYP PER – The St. John's wort (*Hypericum perforatum*) was chemically treated on the 25th of July 2013 with a spray mixture of pesticide (6oz/15gal Vista, Dyne-Amie, Highlight) . Later growth was pulled making certain to remove as much of the root system as possible to prevent rhizomatous re-sprouting. The entire plant was bagged for disposal.

ISA TEN – Dryer's Woad (*Isatis tinctoria*) was pulled getting as much of the taproot as possible as an experimental treatment. Given that this was the first individual recorded in CRLA the entire plant was collected as a voucher specimen.

TRA DUB – Western Salsify (*Tragopogon dubius*) was pulled making certain to remove the taproot. Any seed head at any stage of development was removed and bagged as the seeds continue to develop on the desiccated plant. Culms, foliage, and roots were left to desiccate.

RUM ACE – Sheep Sorrel (*Rumex acetosella*) was primarily pulled making certain to remove as much of the rhizomes as possible. Mature seed heads were bagged and removed. Culms, foliage, and roots were left to desiccate.

Results:

Disturbance Areas:

Roads

The roads bore the greatest concentrations of invasive species in the park. S HWY 62 especially had a wide variety and dense concentration of invasive species including the majority of the HYP PER. The infestation continued up through W HWY 62 to a slightly lesser degree. Both stretches should be walked and scouted in their entirety in following seasons with specific focus on the Ponderosa stretch of S HWY 62.

The infestation on Munson Valley Rd was far less intense but still present, epically around the Headquarters. There were also late blooming spots of HYP PER on stretches of Lower Munson Valley Rd.

East and West Rim drives were fairly clean but had a few invasive location and HWY 138 along the boundary had spots of Spotted Knapweed (*Centaurea maculosa*) along a burned area where it could easily make its way into the disturbed area in the park. The CEN MAC plants had gone to seed by the time they were treated summer 2013

North Entrance Road was clear of invasive species except where it intersected with HWY 138 and the entrance station. Likewise Pinnacles road was clean of invasive species except for the TAR OFF at Lost Creek Campground. (*Map 1*)

The HYP PER infestation along the roads was treated with herbicide¹ on July 25, 2013 by the Oregon Department of Agriculture crew

Rim Village

Rim Village was heavily infested with invasive species which were treated throughout the season; primarily TAR OFF, RUM ACE, and TRI REP. This is a place of near continuous invasion and will need to be treated in perpetuity. (*Map 1*)

HQ/Housing

Steel Circle, Sleepy Hollow, and Headquarters were heavily infested with invasive species which were treated throughout the season; primarily TAR OFF, RUM ACE, and TRI REP. There was also a patch of HYP PER at the location of the old gas station. This is a place of near continuous invasion and will need to be treated in perpetuity. (*Map 1*)

¹ Pesticide mixture(6oz/15gal Vista, 9oz/15gal Tordon, Dyne-Amie, Highlight) on the 25th of July 2013. Treatment Applicators Rob Banks, Eddie Simnone DOA.

Mazama Village/Mazama Campground

There were a scattering of HYP PER infestations around the Xanterra dorms and TAR OFF around the Mazama Campground store. Several loops in the Mazama Campground were repaved summer 2013 and the surrounding soil will be need to be monitored for following seasons. (*Map 1*)

Lost Creek Campground

There was a scattering of TAR OFF along the stream in Lost Creek Campground. (*Map 1*)

South Yard

South Yard storage area displayed the standard variety of invasive species. Of note were a VER THA infestation and a few spots of HYP PER. (*Map 6*)

Anderson Quarry/Pole Bridge Creek Quarry

The quarries displayed the standard variety of invasive species. The footprint area of the HYP PER infestation of Pole Bridge Creek Quarry had changed noticeably. The new area was marked with pink flags. (*Map 6*)

Back Country:

Red Blanket Canyon

The Red Blanket Canyon area in the southwest corner of the park was severely burned in 2008. The resulting disturbance has left the area subject to intense invasion by exotic plants, primarily Compositae with airborne seeds. CIR VUL, CIR ARV, HYP PER, VER THA, *Seneico Sylvaticus*, and *Lactuca serriola*. Track logs were taken with the GPS and Recorded on a map.

Spruce Lake

The shoreline of Spruce Lake (NW corner of CRLA) is moderately infested with a small variety of invasive herbaceous species. These include CIR ARV, CIR VUL, SEN VUL, and VER THA. The majority of the infestation is scattered along the South shore and concentrated at the SE corner of the shore. During low water years the instance of invasives is usually higher, and this appears to be a low water year (*Pic 1*). However there is a handful of CIR VUL on the NE shore usually only sprouting during low water years. The SEN VUL is located in the NE corner of the lake in and around the fallen logs and is easy to miss.

Of particular note is the CIR ARV population. While it appears to be limited to the SE corner of the lake it has been persistent over seven years and persistent within seasons. It was pulled on July 30th 2013, Aug. 15th 2013, and Sept. 10th 2013. On both of the subsequent treatments the plant population had re-sprouted with ~100 plants. On the Sept. 10th treatment

forest debris were laid down in an attempt to shade out the CIR ARV while consideration was given to the local population of rare Carex (*Carex Crawfordii*) CAR CRA in competition with the CIR ARV.

Poison Meadows

Poison Meadow is heavily infested with Western Salsify (*Tragopogon dubius*) TRA DUB, there is a scattering of TAR OFF, a dense patch of RUM ACE away from the main meadow, one incidence of HYP PER, and some CIR VUL. The TRA DUB was first reported and treated in the 2012 season and a concentrated effort was made to treat the meadow in Summer season 2013.

The initial treatment for the TRA DUB, July 2nd 2013 only resulted in the location of 10 plants. Follow up treatments resulted in far more as the plants matured; July 2nd 2013-10, July 31st 2013-1888, Aug. 14th 2013-1478, Aug. 20th 2013-1726, Sept. 12th 2013-266. Checking the meadow in mid-July is suggested before the TRA DUB has a chance to go to seed. However this year germination has been about a month early across locations and species so following years might find late July the more effective date range.

TRA DUB was observed to resprout from a taproot left in the ground and observed to continue producing new heads as long as the season would allow. Therefore it is suggested to pull the entire taproot even after the initial seed head have dispersed.

TRA DUB is extremely difficult to differentiate from local native *Poaceae* species in its first year grass stage making mechanical treatment in this stage generally impractical, also it is more difficult to pull the taproot. Pulling the second year bolting stage appears to be the most practical method. However the Poison Meadow population shows indications of supporting facultative annual behavior and it is useful to pull well developed grass stage after the base has begun to thicken.

Castle Creek

Castle Creek Meadows are heavily infested with CIR VUL, TAR OFF, and SON ASP. The SON ASP and TAR OFF appear to be confined to the lower meadow areas while the CIR VUL also infests a forest regrowth area above the springs that water the meadow and continue along downstream for a short distance.

Summer season 2013 the CIR ARV were treated before the majority had gone to seed and all visible rosettes were pulled. The downstream areas were scouted for a few hundred yards and the infestation appears to not go beyond the meadow area along the creek.

Crater Creek

The Crater Creek site had a small infestation of CIR VUL consistent in number with that seen in previous years. Summer Season 2013 the plants were pulled on Sept. 10th. The handful of bolting plants had gone about 20% to seed and all rosettes were pulled.

Cottonwood Meadow

Cottonwood Meadow is mildly infested with CIR VUL. The densest infestation is in the fallen logs along the west edges of the meadow (*Map 5*). Summer 2013 many of the heads had gone to seed by the time they were removed.

PH3 Burn Unit

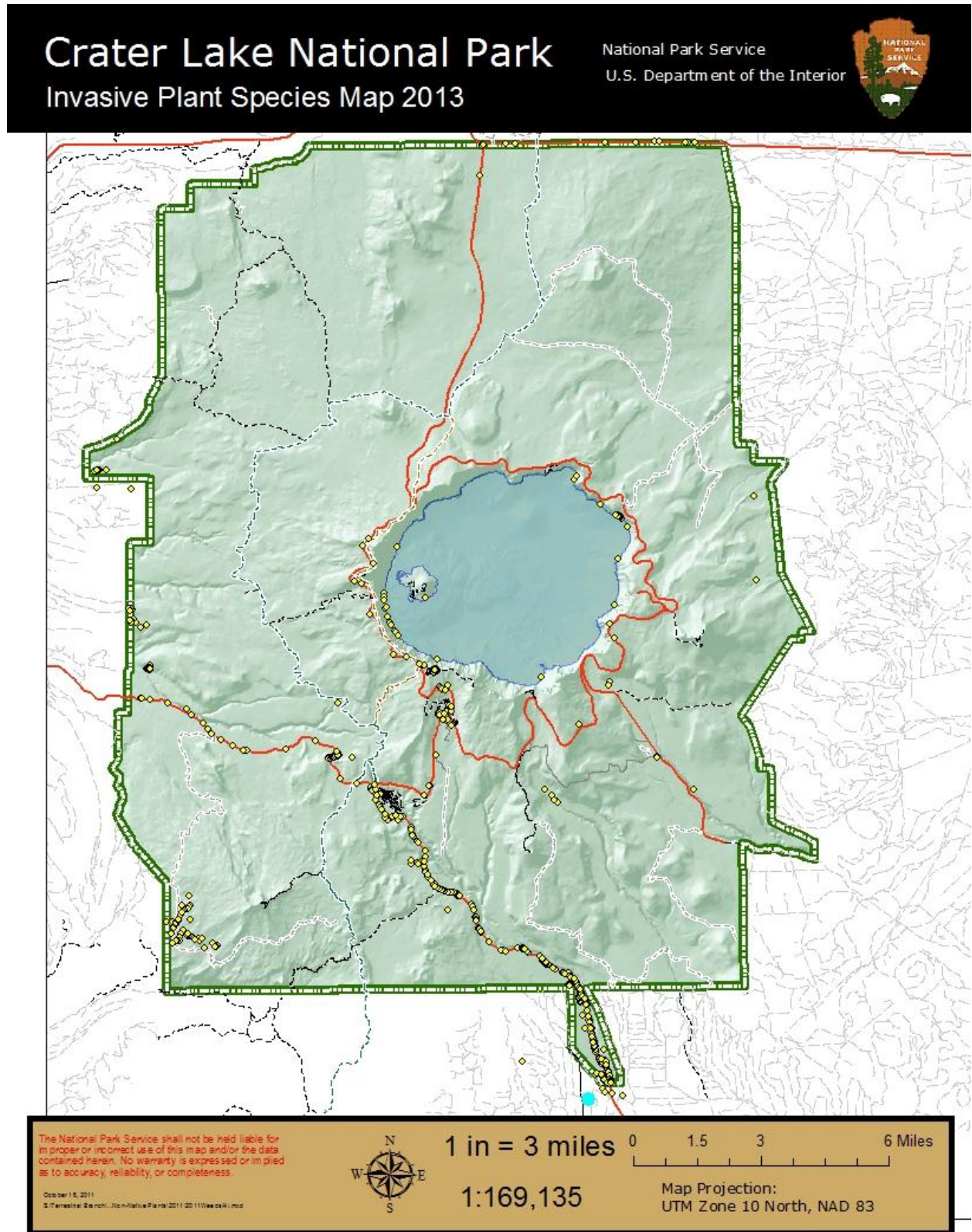
The PH3 burn unit in the Panhandle is infested with a variety of Compositae species including CIR VUL, SEN SYL, TAR OFF, and multiple patches of CIR ARV that appear to be persistent between years and within seasons. Most plants were pulled before they went to seed. (*Map 1*)

Pothole Springs Creek

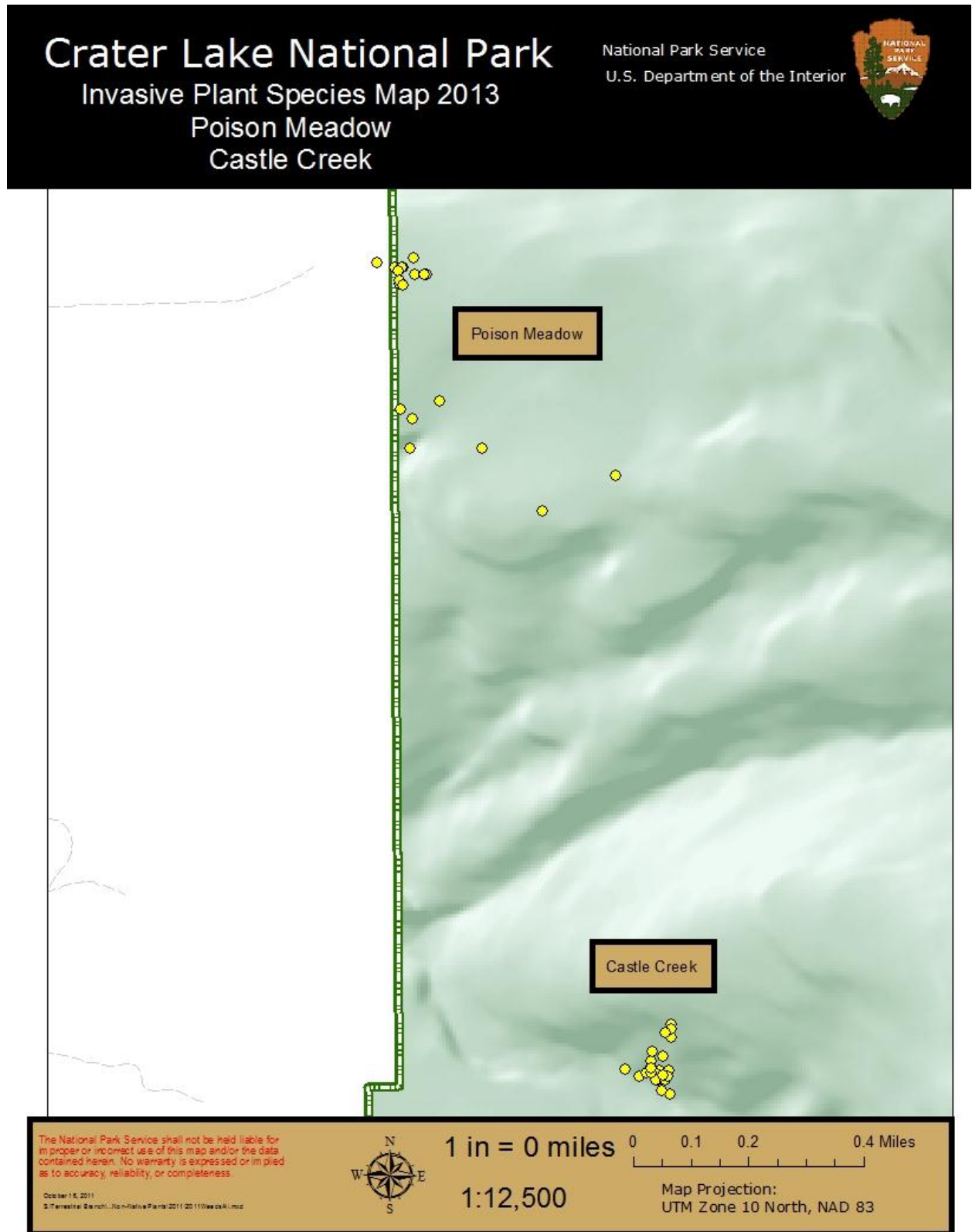
Pothole Springs Creek has a few TAR OFF infestation sites that were pulled after they had gone to seed Summer 2013. (*Map 1*)

Appendix 1 – Maps

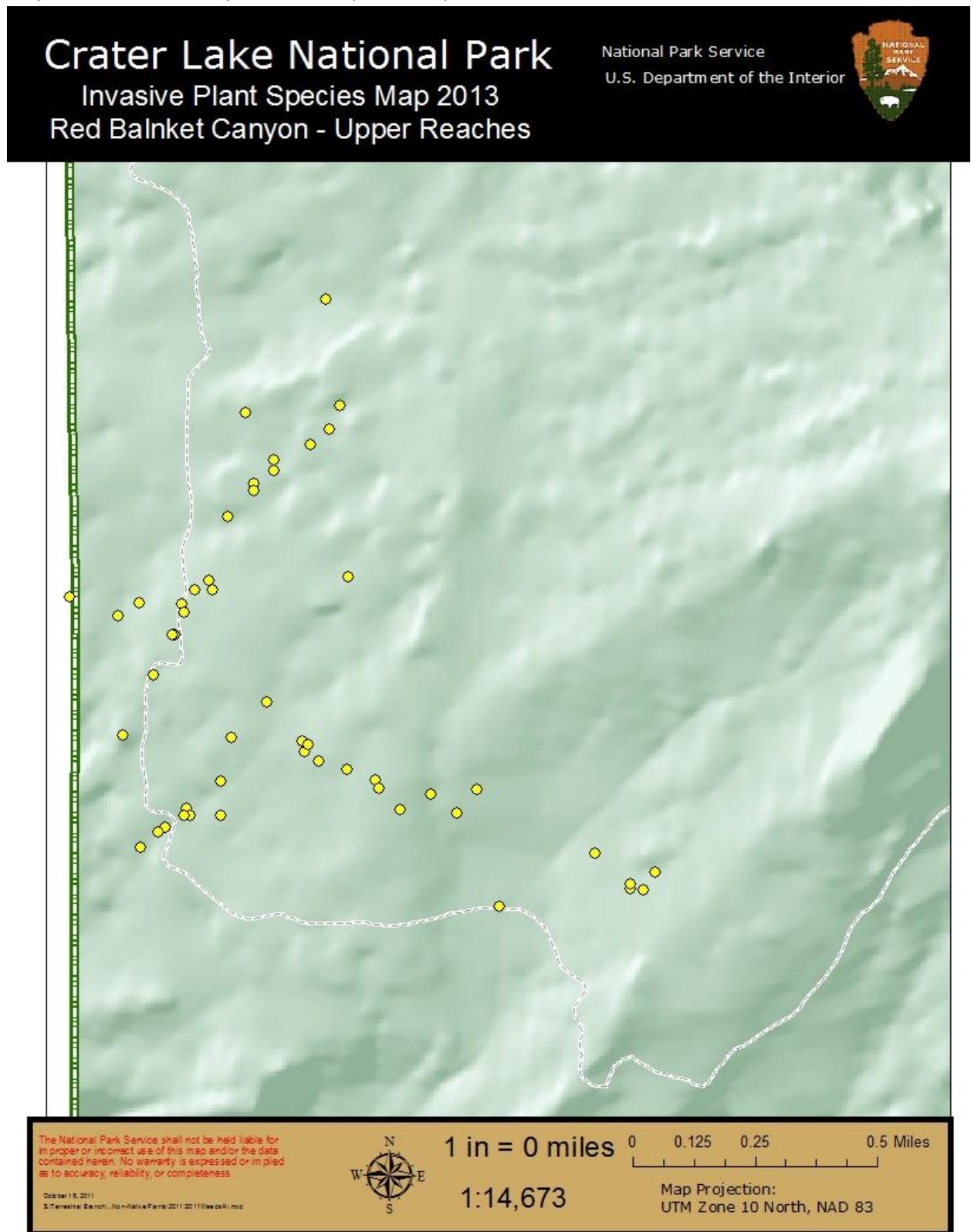
Map 1: Crater Lake National Park-complete invasive species map 2013.



Map 2: Poison Meadow and Castle Creek invasive species map 2013.



Map 3: Red Blanket Canyon invasive species map 2013.



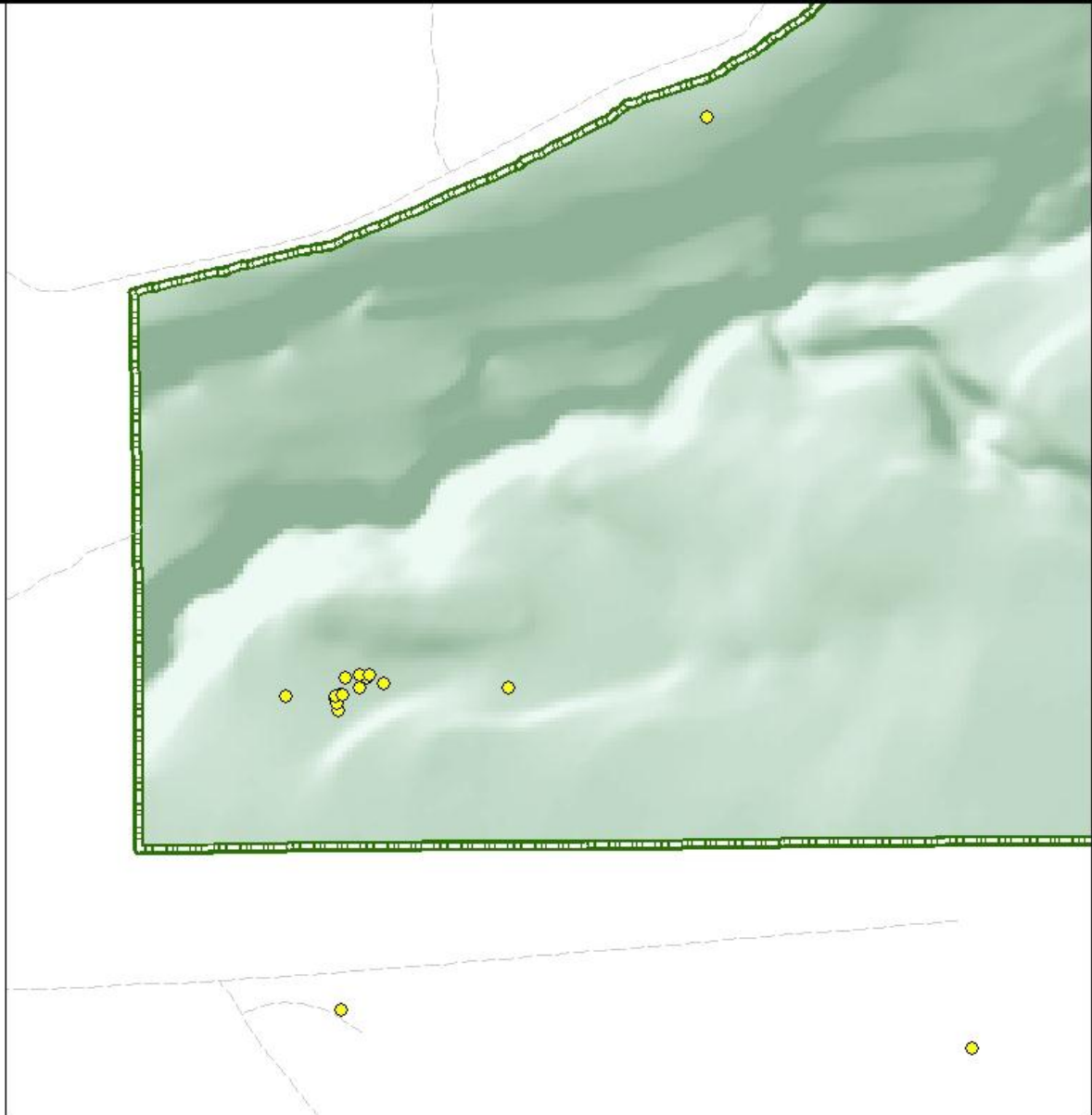
Map 4: Spruce Lake and Crater Creek invasive species map 2013.

Crater Lake National Park

Invasive Plant Species Map 2013

Spruce Lake Crater Creek

National Park Service
U.S. Department of the Interior



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October 16, 2011
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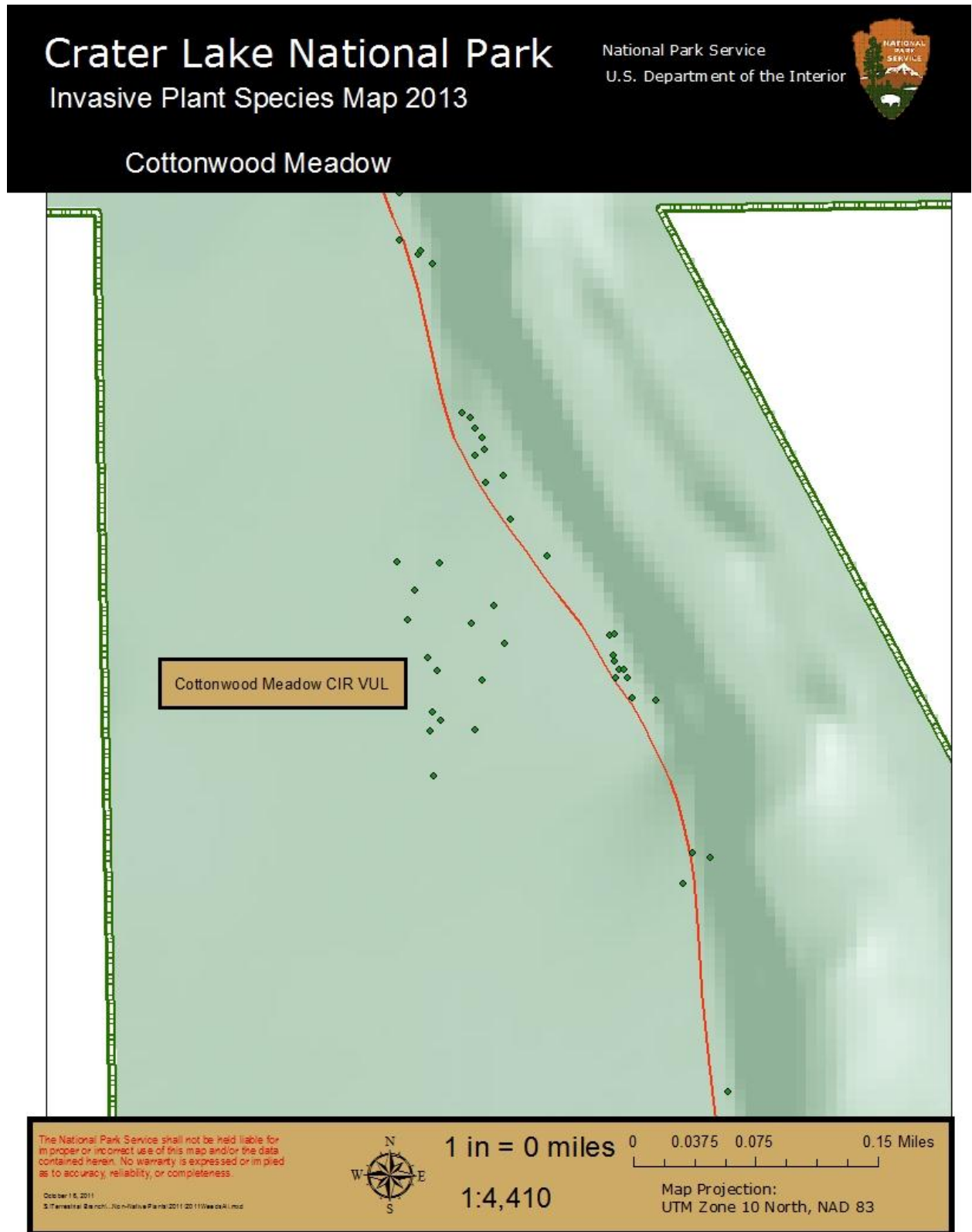
1 in = 0 miles

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0 0.075 0.15 0.3 Miles

Map Projection:
UTM Zone 10 North, NAD 83

Map 5: Cottonwood Meadow invasive species 2013.



Map 6: South Yard, Mullein Hill invasive species 2013.



Appendix 2 – Pictures

- 1) Spruce Lake water level Sept. 10th 2013, observed seasonal low

